PROGRESS REPORTS

FROM

EXPERIMENT STATIONS

SEASON 1958-59

NYASALAND

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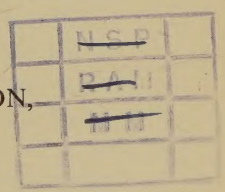
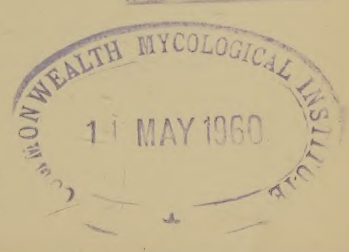




STAFF

The Cotton Specialist, Nyasaland, Mr. J. M. Munro, B.Sc., is a member of the Corporation's staff, working at the Government Experiment Station, Makanga.

The Cotton Pest Research Scheme is a Colonial Development and Welfare Scheme in conjunction with the Nyasaland Agricultural Production and Marketing Board and the Federal Government; its team of entomologists are stationed at its headquarters at the Gatooma Research Station, Southern Rhodesia, and at Makanga.

NYASALAND

PROGRESS REPORT FOR THE SEASON 1958-59

BY

J. M. MUNRO

COTTON SEASON

Province	*Type of crop*	*Legal sowing dates*	*Harvest*	*Legal uprooting date*
Southern, Central	Summer	15 Nov.-7 Jan.	Apr.-July	31 July
Northern	Winter	16 Apr.-15 June	Oct.-Jan.	15 Jan.

SUMMARY OF WORK

The replacement of CLB by Albar 637 continues. This is being followed up by the testing of single plant selections from A637, and a crossing programme, now in the F_2, between Albar 51 and the best blight-susceptible varieties at Makanga.

Investigations of the causes and cure of the shedding of early bolls characteristic of early planted cotton continues. This will be of major importance if irrigated cotton is developed in the Elephant Marsh.

The possibilities of interplanting cotton and maize are being studied.

Information is being accumulated on crop yields and crop water requirements under irrigation. A polder scheme to reclaim and irrigate 60,000 acres of the Elephant Marsh is being studied by the Government, which would increase the cotton acreage in Nyasaland by about 50%.

The Cotton Pest Research Scheme, to study red bollworm and cotton stainers in the Federation, has been extended for a further three years.

INTRODUCTION

Makanga Station

Weather.—Although there was light rain in the first week of December, the soil was not wet enough for planting until the 16th. Seedlings suffered from drought in a two-week dry spell after germination, but from then on conditions were excellent. The only effective rain after mid March was in two showers of half an inch each. Meteorological statistics are presented in Table 1.

Staff.—Mr. D. F. Collings, the farm manager, returned from leave in November 1958, and took charge of the station from November to March when Mr. J. M. Munro was on leave. Mr. A. Tullach was transferred to Kasungu in March.

TABLE 1

METEOROLOGICAL DATA — MAKANGA

Month	*Rainfall*		*Humidity %*		*Temperature*		*Sunshine*	*Evap.*
1958	*ins.*	*days*	*6 a.m.*	*2 p.m.*	*max.*	*min.*	*hrs./day*	*ins.*
Apr.	0·18	3	97	51	90·7	67·7	9·7	6·58
May	0·18	4	97	51	86·9	60·4	8·9	5·35
June	0·69	10	97	56	81·1	57·0	5·6	3·69
July	0·16	4	96	50	80·8	52·5	6·6	4·68
Aug.	0·73	4	96	39	84·0	53·9	7·8	5·53
Sept.	0·15	2	89	37	93·4	65·6	8·4	7·87
Oct.	0·12	2	86	38	96·7	70·3	7·9	9·62
Nov.	1·86	3	84	41	99·7	73·9	8·8	9·94
Dec.	3·85	12	86	44	95·6	74·0	7·6	8·31
1959								
Jan.	8·25	14	95	54	91·6	71·6	7·2	6·40
Feb.	9·53	11	98	53	89·3	72·8	5·7	4·97
Mar.	3·58	8	97	57	89·5	69·3	8·6	6·30
Apr.	0·41	2	95	54	90·0	65·9	9·9	5·73
May	—	—	95	44	91·9	60·8	9·7	6·36
June	0·24	3	96	48	84·3	56·7	7·8	3·94
July	0·69	5	96	48	83·7	57·0	7·5	4·77
Aug.	0·76	5	93	38	87·0	56·6	8·9	5·92
Sept.	0·16	1	88	38	89·7	63·1	8·3	7·76

Means	*1:1 limits*							
	lower	*upper*	(*13 years*)		(*15 years*)		(*4 years*)	(*5 years*)
Oct.	—	—	74	35	97·3	70·0	8·6	10·32
Nov.	1·77	4·72	78	43	96·1	72·3	8·3	9·78
Dec.	4·20	7·79	82	56	92·5	72·1	7·0	6·38
Jan.	3·68	9·17	89	64	91·6	72·2	6·4	6·08
Feb.	3·28	8·85	90	63	90·7	72·2	6·6	5·41
Mar.	2·49	5·15	91	62	88·4	70·8	8·2	5·81
Apr.	0·37	2·06	90	57	88·6	67·3	8·3	5·70
May	—	—	90	52	84·9	60·6	8·4	5·18
June	—	—	87	54	80·7	54·7	6·9	3·94
July	—	—	89	47	82·1	54·4	7·7	4·58
Aug.	—	—	87	43	85·6	56·7	8·3	5·66
Sept.	—	—	78	40	91·7	62·8	7·9	7·71

Cotton Pest Research Scheme.—The scheme has been extended for a further three years from January 1960, and includes an extension of red bollworm investigations to the Central Province of Nyasaland. Mr. A. Macdonald was appointed as technical assistant at Makanga on 1st September 1959. Mr. R. C. H. Sweeney left on vacation leave on 1st August 1959.

Mr. E. O. Pearson, Director of the Commonwealth Institute of Entomology, visited Southern Rhodesia and Nyasaland in April to see the progress of the scheme.

The Cotton Season

Northern Province.—Acreage and yield were much the same as last year. A few red bollworm larvae were found in the middle of October, but nowhere near the numbers seen the previous season. Some cotton was being taken from open bolls by field mice in the Rukuru valley at that time.

Central Areas.—Less cotton was planted in the Kota Kota and Salima areas than last year; red bollworm again took a large part of the crop, though the damage varied considerably from one garden to another.

Further south, in the Dedza, Fort Johnston, and Lisungwe areas, there was a small increase in acreage, and good crops were harvested in spite of the presence of red bollworm.

There was very little stainer damage this year.

Lower River.—In the main cotton area round Ngabu and Sorgin earlier plantings generally failed, and the final sowing was made in the first week of January; elsewhere much of the crop was established in mid December.

The season was one of the best ever seen in the Lower River, and the crop of 8,966 short tons of seed cotton is the biggest ever produced. About 11% was second grade cotton. In spite of the big crop, very little was left in the field unpicked. Rainfall in January and February was good, distributed in heavy showers with bright weather between. There was little rain in March and April, and harvesting conditions were excellent. Little uprooting was done before the middle of July.

The usual insect pests were all present, but damage to the crop was small. Jassid damage was confined to the early part of the season, and stainers appeared in the crop very late. Angular leaf spot was prevalent towards the end of February, and in March and April severe cases of bacterial stem infection could be found in nearly all areas, but this severe attack was confined to a small proportion only of the plant population.

Cotton production.—The total Nyasaland production of over 15,000 bales in 1958-59 compared very favourably with the 1957-58 total of some 9,000 bales, and the proportion of second grade seed cotton was only about 10% as against 17%.

PRODUCTION IN 400 LB. BALES

African Trust Land	*1958*	*1959*
Northern Province	606	637
Central Province	256	437
Southern Province	7,537	13,505
Estates	908	1,071
Total	9,307	15,650

COTTON BREEDING

Albar 51

Multiplication of Albar 637 has yielded some 160 tons of seed, which is to be distributed in the market areas round Chikwawa in 1959-60. Red bollworm caused considerable loss of crop at Toleza; Chapananga was comparatively free from insect damage, but showed a fairly heavy

infection of angular leaf spot in February and early March. The infected leaves were soon shed, and very few bacterial stem lesions developed; CLB, in the adjacent market area, showed considerable stem infection.

In six variety trials, A637 averaged 71 lb. more lint per acre than CLB, an increase of 19%.

Single plant selections.—21 direct selections from Albar 637 and the related Albars were tested in trials; six of these equalled or exceeded A637 yield; their standard of jassid resistance is higher, but jassid attack was not important this year. 36 selections out of the 80 grown this season are being carried on for trial in 1959-60. Of the three Uganda selections, Albar (56)16 and 23 both yielded well (Table 2).

TABLE 2

COTTON VARIETY TRIALS

Lint yields in lb./acre

	Station trials			*Lower*
Variety	*Makanga*	*Ngabu*	*Chitala*	*River*
CLB	303	566	242	363
A637	372	553	291	429
ABC31	289	—	—	—
40	302	434	267	356
109	274	—	—	—
146	363	527	292	372
AC31	354	507	294	394
A(56)16	344	—	292	406
22	320	572	214	358
23	358	594	285	400
UPA(56)5	402	555	312	433
S.E.	±21·7	±32·1	±11·4	±16·1
L.S.D. (5%)	61	91	32	46
C. of V.	17%	13%	11%	15%
Replications	6	4	6	28/12)
Planted	17.12.58	—.12.58	19.12.58	(various)

Plot size 1/145 acre. Spacing 3 ft. × 2 ft., 3 plants/hole. Station trials 5 × 5 lattices; district plots in the Lower River consisted of a single replication of CLB and A637 in each garden, with three of the other seven varieties arranged in balanced incomplete blocks.

Albar Crosses

Three of the Albar 49 crosses are being retained for further testing (ABC40, ABC146, and AC31) (Table 2). UPA(56)5 from Uganda has yielded consistently well; it is below the standard of jassid resistance required, but has shown some segregation for this character.

Selections were taken from the F_2 of the Albar 51 crosses made at Makanga in 1957; field selection was mainly based on jassid resistance. About 50% have been discarded on yield per plant and lint index, leaving 500 which will be tested for resistance to bacterial blight next year.

Ginning Percentage

Pickings taken at approximately ten-day intervals showed a steep rise in ginning percentage after 2nd May, following very much the same pattern as last year. Much of the fall in seed weight on Makanga this

year can be attributed to stainer damage; the grade 1 seed cotton from the last picking contained only 10% of viable seed.

TABLE 3

GINNING PERCENTAGE OF UGANDA SELECTIONS

	Uganda	*Chitala*	*Makanga*	*Ngabu*
CLB	—	35·5	30·8	31·6
A637	(36-37)	37·0	31·1	32·6
UPA(56)5	38·2	38·6	32·4	34·4
A(56)16	40·0	38·6	33·4	—
A(56)22	39·9	37·0	31·8	33·0
A(56)23	40·3	40·6	33·2	36·4

Low ginning percentages continue to be recorded in the Lower River (Table 3). Under these conditions, however, the Uganda strains (chosen for their high ginning percentage) show a definite improvement over the other strains which are being grown; lint index is also higher.

Sudan Varieties

Seed from four families of BAR 11/9, homozygous for $B_2B_3B_6$, was obtained from the Sudan, together with BAR HOP 7, a cross between BAR 7/8.2 and Hopi Acala. In observation plots this year the yields were satisfactory; they grew to the same height as other varieties. There was little bacterial blight on the station, and their resistance to natural infection could not be assessed.

HUSBANDRY AND ROTATION CROPS

Cotton Shedding

Irrespective of time of planting, practically no fruit has been set in the last two seasons before mid February, and the first bolls have opened in mid April. A series of observation plots were given different treatments to see whether fruit setting was affected by variation in time of planting, spacing, topping, irrigation, etc. Only two of the treatments appeared to have any effect—spraying with a fruit drop hormone advanced the first picking date by two weeks, and a wider spacing by one week; spraying with insecticide had no effect. Only about one-third of the shed buds and bolls showed signs of insect damage, and it would appear that the bulk of the shedding is physiological. Hormone spraying will be tested in a replicated trial next season.

The result of this shedding is that early planted cotton grows very tall and top-heavy. This is an important factor in a year of early planting rains, and will be of even more importance if early planting with irrigation becomes possible on a large scale in the Elephant Marsh.

Manuring and Fertilizers

Five replicated trials included various fertilizer and organic manurial treatments applied to cotton, maize, and groundnuts. As in previous seasons, there were no significant responses.

Mulching and Ridging

Trial 4/2 was planted with groundnuts this year (Table 4). Yields from tie-ridged plots were more than twice those from flat planting, and a heavy straw mulch had the same effect; the combination of these two treatments was not significantly better than either one by itself.

TABLE 4

RIDGING AND MULCHING TRIAL
Makanga—LT.3—Trial 4/2

	Yield of shelled groundnuts in lb./acre			
	No mulch	*Light mulch*	*Heavy mulch*	*Mean*
Flat	203	487	575	423
Ridged	278	483	634	466
Tie-ridged	531	614	617	589
Mean	358	529	610	
		Treatments	*Means*	
S.E.		±43·9	±25·4	
L.S.D. (5%)		126	73	
C. of V.		22%		

Plot size 1/81 acre. 3 × 3 factorial, 6 replications. Seed rate 150 lb./acre. Spacing 18″ × 9″. Planted 11 January 1959.

In trial 9/7, where mulching of maize was combined with supplementary irrigation, mulching gave a significant increase in yield. Soil temperatures at 3″ below the soil surface showed less variation under the mulch: mean daily range was 81·0° to 82·5° during February and March; in the no mulch plots it was 79·4° to 84·6°. The irrigation did not affect yield significantly; rainfall was adequate, and only 4″ was applied.

Rotation Trials

Trials 8/10 and 8/11 showed no significant differences in their second season; the treatments were described in last year's report.

Cotton-Maize Interplanting

Local opinion among African cultivators still favours interplanting of cotton and maize on better land in the Lower River, although all cotton has been grown in pure stand since 1952. Earlier work has shown that cotton planted between normally spaced maize (3 feet between rows) gives very poor yields and ripens late, but that maize spaced at 6 and 9 feet between rows allows the cotton to grow very much better. These earlier experiments were carried out before 1952, and the cotton was usually planted in January or later; no pure stand maize was included to measure the effect of cotton on maize yields.

The earlier experiments, and observation plots planted in 1957-58, indicated that the planting of maize and cotton on alternate ridges

might have economic possibilities under the present conditions of planting and uprooting cotton. The results of a replicated trial this season (Table 5) are even more favourable than was expected; from the same area of land, interplanting in this way has increased the yields of both maize and cotton. This trial will be repeated in the 1959-60 season.

TABLE 5

INTERPLANTING OF COTTON AND MAIZE

Makanga—Field 13—Trial 9/3

	Combined yields in lb. from 2 acres. Seed cotton + shelled maize.		
Cotton and maize planted 18 Dec. 1958			
1 acre pure stand of each	959	+	2904
2 acres interplanted	1237	+	3755
Cotton planted 6 Jan. 1959: maize 18 Dec. 1958			
1 acre pure stand of each	905	+	2931
2 acres interplanted	1032	+	3728
S.E.	±39·9		±137·7
L.S.D. (5%)	117		401
C. of V.	14%		15%

Plot size 1/48 acre. 6 replications of 8 treatments. Seed rate: cotton 20 lb./acre; maize 15 lb. Spacing: cotton 3 ft. × 2 ft.; maize 3 ft. × 3 ft.; both 3 plants/hole. Interplanting: alternate ridges cotton and maize.

The foothill area along the east bank of the Shire is better suited to maize than the main cotton growing areas to the west, where sorghum is the staple grain crop. Cotton production in the former (east bank) area has declined sharply since 1952, and it is possible that interest in cotton would revive if interplanting with maize were allowed.

IRRIGATION

The Shire Valley Project

The Elephant Marsh, an area of some 160 square miles lying between Chiromo and Chikwawa along the Shire River, has been further surveyed to investigate the possibility of reclaiming and irrigating part of the area by means of a polder. The report of the consultants, NEDECO of Holland, is expected before the end of 1959. Such a scheme would provide an additional 10,000 acres or more for cotton growing in the Lower River; about 25,000 acres are planted at present.

Crops and Yields

Table 6 should be read in conjunction with Table 4 of last year's report, and summarises the results for 1958-59.

TABLE 6

COMPARATIVE VALUE OF IRRIGATED CROPS

Crop	*Acres*	*Yield/acre*	*Value*	*Value/acre*
Dry season 1958				
Linseed	0·36	768 lb.	1/- per lb.	£38
Wheat	2·0	796 lb.	3d. per lb.	£10
Maize	1·0	2871 lb.	1d. per lb.	£12
Red beans	0·87	597 lb.	£30 per ton	£8
Beetroot	0·10	13·5 tons	£8 per ton	£108
Carrots	0·10	24·3 tons	£8 per ton	£194
Onions	1·0	9·6 tons	3d. per lb.	£240
Potatoes	0·07	4·8 tons	3d. per lb.	£120
Lucerne meal	0·91	2·5 tons	£20 per ton	£50
Sugar (4th cut)	0·60	2·2 tons (estimated)	£50 per ton	£110
Wet season 1958-59				
Cotton	3·0	1900 lb.	6d. per lb.	
		222 lb.	2d. per lb.	£49
Maize	2·0	3646 lb.	1d. per lb.	£15
Groundnuts	2·0	890 lb.	4d. per lb.	£15

Crop Water Requirements

Measurement of evaporation.—Since the installation of the meteorological station some 15 years ago, the trees in the vicinity have grown considerably. It is suspected that the evaporation as measured by the open pan is being underestimated; comparable piche evaporimeters in the irrigation area are giving readings some 15% higher. These will be continued, and the Water Development Department have supplied a second evaporation pan which has been installed in a more open site. Both pans were painted black inside in October 1959, in accordance with the recommendations of the 3rd Hydrology Conference at Kampala in August 1958. A cup anemometer was installed at the new site in September 1959.

Until more data are available, irrigation factors continue to be based on the original evaporation pan readings.

Over 26 months, the evaporation recorded by the open pan in inches per month and the piche evaporimeters exposed in the open in ccs. per month are related as follows: —

$$E_o = 2{\cdot}47 + .01907\ E_{piche}\ (r^2 = .8806).$$

Leaf area measurements.—Leaf area curves for crops grown in the 1958 dry season and the 1958-59 wet season do not differ appreciably from those shown in last year's report.

Soil moisture.—Regular readings using gypsum blocks and the Bouyoucos meter were taken under an irrigated maize crop in the 1958 dry season. An attempt to correlate these readings with direct determinations of soil moisture using the drying oven has only emphasized the irregularity of the soil profile at Makanga. An alluvial soil, it contains layers of sand at varying depths in the predominantly silty loam. Available moisture in the silty loam probably lies between

35% (field capacity) and 18% (wilting point), while in the sandy layers it lies between 16% and 5%.

Irrigation Experiments

Six formal irrigation experiments were carried out according to the design illustrated in Fig. 6 of last year's report; all treatments were watered according to the leaf area index, making an allowance for evaporation from bare soil, until the particular treatment index (=irrigation factor) was reached; this factor was then applied for the rest of the period of the experiment.

The results of these experiments are presented in Table 7. Lack of response to irrigation may mean that the lowest irrigation rate already supplies adequate moisture, as in the wet season trials; or that a deficiency is being made up from available soil moisture reserves, as in the case of maize. Some of the crops are discussed in more detail below.

Cotton.—There is evidence this year that an irrigated crop in the dry season preceding cotton has a beneficial effect; as previously, supplementary irrigation applied to the cotton itself has either reduced the yield, or had no significant effect (Table 7), and it seems that too much water is being applied at some stages of growth. It is difficult to maintain control of the water supply, as it is necessary to grow cotton in the wet season to conform with the close season enforced here to limit red bollworm. Covering plots with plastic sheeting was tried, but proved unsatisfactory because it was lifted and damaged by wind when the cotton was small.

TABLE 7

IRRIGATION FACTORS AND YIELDS

Irrigation factor	*Jan./Dec. 1958*	*Dry season 1958*			*Wet season 1958/59*	
	Lucerne hay *tons/acre*	Wheat grain *lb./acre*	Shelled maize *lb./acre*	Shelled beans *lb./acre*	Seed cotton *lb./acre*	Shelled groundnuts *lb./acre*
0·4	4·24			450	2227	
0·6	4·79	1268	2986	500	2228	1106
0·8	5·60	1237	2869	636	2383	1173
1·0	6·81	1010	2947	646	2006	1053
1·2	6·87	1044	3109			1050
1·4						942
1·5				770		
1·6		860	3237			
2·0		683	3081	578		
2·4			2852			
3·0		827				
S.E.	±0·150	±173·6	±118·9	±49·6	±151·4	±39·2
L.S.D. (5%)	0·45	N.S.	357	149	N.S.	N.S.
C. of V.	6%	30%	7%	17%	12%	9%
Replications	5	3	3	4	6	6
Planted	12.6.57	29.4.58	2.6.58	23.7.58	18.11.58 30.12.58	16.12.58

Plot size 1/27·5 acre throughout.

Nevertheless, the good yields in the 1958-59 season indicate that adequate moisture in January and February (prior to and during boll setting) is important; irrigation after the end of March appeared to reduce yields in 1957-58. Preplanting irrigation on observation plots also appeared to reduce yields, and evidence from other crops indicates that it may be better to plant dry and build up soil moisture as the crop develops. These indications will be followed up in the 1959-60 season.

Soil block readings taken during the growing season under the cotton crop in Field L were not reliable, but it is probable that all plots reached field capacity about the middle of January. Blocks were installed at 1, 2, and 4 foot depths in each plot. Irrigation was stopped after 10th March, and by the beginning of June all treatments had dried out to 4 feet, probably nearly to 6 feet according to soil moisture samples taken later.

The three fields in the irrigation area gave yields of over 2,000 lb. per acre of seed cotton (Table 6); this was found even in the treatments receiving little or no supplementary irrigation (Table 7—irrigation factor 0·4). On the remainder of the farm where no irrigation is applied, yields ranged from 700 to 1,600 lb. per acre. The difference appears to be due to the fact that cotton followed an irrigated dry season crop in one case, and a dry season fallow in the other. It seems unlikely that it was due to better soil moisture reserves, as some of the dry season maize plots in Field L had dried out to at least four feet depth, and pre-planting irrigation (see above) gave no increase in yield. It is tentatively suggested that the dry season irrigation may have altered the nitrogen status of the soil.

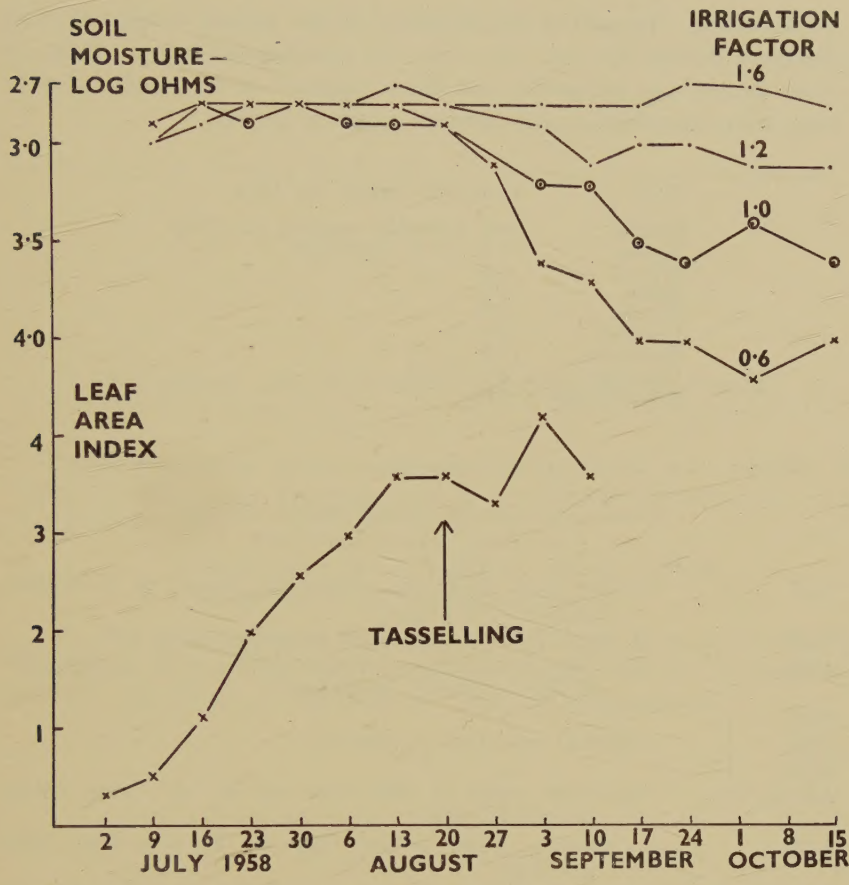
Maize.—Trial 8/28 in Field L showed no significant differences in yield between different irrigation factors ranging from 0·6 to 2·0 times the open pan evaporation. Soil block readings, however, showed that the maize at the lower irrigation rates was drawing on soil moisture reserves.

The leaf area index reached a maximum of 4·0 at the time of tasselling, ten weeks after planting (Fig. 1). In spite of this increase in leaf area, an irrigation factor of 0·6 was sufficient to maintain the soil at field capacity down to 4 feet. During the four weeks after the tassels emerged, however, a factor of 1·6 or more was needed; with less irrigation the maize was removing available water from the soil. From the 14th week onwards, all factors were sufficient to maintain soil moisture; it is difficult to understand why the higher factors did not show any replenishment of the reserves.

This pattern of water use is being studied further in the 1959 dry season.

FIG. 1

SOIL MOISTURE, IRRIGATION AND LEAF AREA OF MAIZE



Soil moisture in log ohms is the mean of 3 plots and 3 gypsum blocks at 1 ft., 2 ft. and 4 ft. depths in each. Leaf area was measured in plots irrigated at a factor of 2·4. Planted 2nd June; yields shown in Table 7.

Lucerne.—Trial 7/18 continued to show that the best yields were obtained with an irrigation factor of 1·0 to 1·2; a similar trial, 8/24, has been established with factors covering the range 0·8 to 1·6.

Wheat.—In trial 8/25 it was confirmed that the best yields of wheat were obtained with a factor of 0·6 or less. It was noticeable that with the higher water rates grasses, notably *Panicum maximum,* appeared above the crop just after flowering, and competed vigorously with the wheat.

Vegetables.—Eight unreplicated plots were each planted with three kinds of vegetables—onions, carrots, and beetroot. These plots were

irrigated at different rates, factors ranging from 0·6 to 3·0. Although the results are not very conclusive, they indicate considerable differences in response to irrigation.

Summary.—Irrigation requirements of the various crops tested at Makanga during the past two years are summarised below. Some of these figures are tentative, and there appears to be much more to learn about requirements at different stages of growth.

Crop	*Irrigation factor* (E_T / E_O)
Cotton	0·5, probably more in Jan./Feb.
Maize	0·6, 1·6 at tasselling
Wheat	0·4
Beans	1·5
Onions	(1·0)
Carrots	(0·6)
Beetroot	(1·2)
Lucerne	1·0 to 1·2
Groundnuts	0·8

Appendix

Origin and special characteristics of the main cotton strains mentioned

CLB	Crown Land Bulk, the commercial variety of Nyasaland, mainly of U4 origin.
CL20	A selection from CLB, with longer and finer lint.
A637	An Albar 51 selection ex Uganda, which is being multiplied to replace CLB in Nyasaland.
A629, A640, A474	Albar 51 selections ex Uganda.
ABC30, etc.	Selections made in 1955 from the F_4 of a cross (Albar 49×BP52)×CL20.
AC31	A selection made in 1955 from the F_4 of a cross Albar 49×CL20.
A(56)16, etc.	Albar 51 selections made at Namulonge in 1956, showing high ginning percentage.
UPA(56)5	A selection made at Namulonge in 1956 from hybrid material (MU8×$BP52^2$)×Albar 51.
BAR 11/9	BAR 11/7 with B_6 added.
BAR 7/8.2	BAR SP84, carrying B_2 and B_3 ex Uganda SP84.
Hopi Acala	A very early type from U.S.A., of high fibre strength.

Received December 1959.

PROGRESS REPORTS FROM EXPERIMENT STATIONS

The reports for the seasons up to and including 1950-51 were published in seasonal volumes; the following are still in print and available at 3/- per volume post free.

1923-25 (one volume), 1926-1927, 1931-32, 1934-35,
1935-36, 1942-43 and 1945-46 to 1950-51.

From 1951-52 the reports from each territory were published individually each season. A few of the 1951-52 reports are out of print, but all others are available post free at 1/- per report or 7/6d. for the seasonal set.

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